5. VARIANCES

Previous CERCLA risk assessments and remedial action objectives for the INEEL have generally assumed potential future residential use of facility areas, following 100 years of federal government control. The federal government owns land occupied by the INEEL Site, which was acquired by DOE's predecessor agencies through public land withdrawals and land acquisitions to conduct nuclear energy research. DOE is capable and obligated to control access and use of the land. Accordingly, risk assessments and remedial action decisions based on future residential land-use scenarios may require more conservative cleanup actions than warranted under more realistic future land-use scenarios, such as industrial with institutional control of access and use, or use as a National Environmental Research Park. For example, a residential scenario usually assumes that future residents will construct 10-ft basements beneath their homes, requiring evaluation and cleanup of contaminants to a depth of 10 ft. In contrast, an industrial scenario limits evaluation and cleanup to the top 6 in. of soil for inhalation and ingestion and to the top 4 ft for external exposure.

DOE Policy 455.1 (2003) requires that once sites have developed their risk-based end state visions, they reevaluate their cleanup activities and strategic approaches to determine if they are appropriate to propose and pursue changes to site baseline documents and affected regulatory agreements.

Table 5-1 lists potential variances between currently planned environmental cleanup objectives and what would be necessary if cleanup decisions were based on land-use scenarios that do not include future residential use. No decisions have been made regarding the variances. They are simply cleanup activities that DOE believes merit further evaluation to determine if they are necessary and a wise expenditure of taxpayer dollars. Cost-benefit analyses and risk assessments will be needed to evaluate whether the variances should be pursued and to ensure that the proposed alternatives are protective of human health and the environment.

Identification of a different end state in the RBESV does not necessarily signal intent by DOE to change its planned course of action at the site. There are many factors that will contribute to any such decision; significant factors are the benefit that would accrue to the taxpayer and the value of any improvement in protection of human health and the environment. If DOE ultimately decides to seek changes to the current compliance agreements, decisions, or statutory and regulatory requirements, those changes will be made in accordance with applicable requirements and procedures. If DOE determines that it is appropriate to propose changes to current cleanup plans and agreements, such changes must be approved through the appropriate legal and regulatory channels with input from stakeholders and regional governmental agencies.

Table 5-2 summarizes the remaining scope of cleanup work at the INEEL. This table compares current cleanup objectives to the proposed risk-based end state for each of the hazard areas and provides the basis for potential variances listed in Table 5-1.

Table 5-1. Variance table.

ID No.	Description of Variance	Impacts (in Terms of Scope, Cost, Schedule, and Risk)	Barriers in Achieving Risk-Based End State	Recommendations
V-1	**Areas with Potential UXO and Other Explosive Materials:** The OU 10-04 ROD (DOE-ID 2002b) currently requires extensive survey and cleanup of the areas that have a higher risk of containing residual UXO and other explosive materials (e.g., TNT or RDX) from World War II era activities. Since public access and land use can be controlled by DOE, a potential variance would be to survey and clean up only those areas where ordnance and explosive materials present a risk to workers because of planned near-term use. The ROD selected remedy was based on an assumption of potential residential use after 100 years. Cleanup levels and actions could be based on industrial standards and other appropriate nonresidential land-use scenarios (such as a National Environmental Research Park) that do not include residential use of the area.	Scope: The area that would require geophysical surveys and cleanup would be reduced by as much as 75%. Institutional controls will be required, as implemented to date, whether or not the area is thoroughly surveyed and cleaned up, because of the inherent difficulty in finding UXO that was buried below surface on impact and because of freeze-thaw cycles, which continue to bring ordnance to the surface. Cost: The cost for complete removal of UXO is estimated at $22 million. Some cleanup of ordnance would still be required, but it is estimated that the savings could be as much as $15 million. The total estimated cost for cleanup of the TNT- and RDX-contaminated sites is $730K. Some additional savings may be possible from cleanup of the TNT and RDX sites to standards that do not include residential scenarios. Schedule: Significant schedule acceleration may be possible. Risk: Risk is currently managed through institutional controls, such as restricted public access and fieldwork control and execution processes. At the INEEL Site, there has never been an incident of a human or animal triggering an explosion as the result of an encounter with UXO, TNT, or RDX, so no increased risk is expected.	U.S. Environmental Protection Agency and State of Idaho agreement to modify the OU 10-04 ROD (DOE-ID 2002b) would be needed.	An evaluation should be conducted to determine the remedial actions needed to protect human health and the environment, assuming no future residential use in areas with potential UXO and other explosive materials. If the currently required work scope is not justified, discussions should be initiated with agencies regarding the preferred regulatory path forward.
V-2	**Firing Range Lead Contamination:** The OU 10-04 ROD (DOE-ID 2002b) currently requires the removal of lead contaminants to residential standards and the recycling and disposal of contaminated soil at the ICDF or at another approved facility A potential variance would be to establish cleanup levels and actions based on industrial	Scope: If cleanup levels were established based upon long-term industrial or other appropriate land use rather than on future residential use after 100 years, it is likely that the quantity of soil requiring excavation and removal would be reduced, and it is possible that some areas may not need remediation. Cost: A cost-benefit analysis has not yet been conducted.	U.S. Environmental Protection Agency and State of Idaho agreement to modify the OU 10-04 ROD (DOE-ID 2002b) would be needed.	An evaluation should be conducted to determine the remedial actions needed to protect human health and the environment, assuming no future residential use in the area of the firing range. If the currently required work scope is not justified, a cost-benefit analysis should be conducted to determine

Table 5-1. (continued).

ID No.	Description of Variance	Impacts (in Terms of Scope, Cost, Schedule, and Risk)	Barriers in Achieving Risk-Based End State	Recommendations
	standards and other appropriate nonresidential land-use scenarios (such as a National Environmental Research Park) that do not include residential use of the firing range and surrounding area.	Schedule: It is likely that the remediation work could be completed sooner. Risk: No increased risk to workers or the public is anticipated, as cleanup levels will be protective of human health and the environment for the planned future land use.		if the potential savings justify further action. If so, discussions should be initiated with agencies regarding the preferred regulatory path forward.
V-3	**INTEC Contaminated Soil:** The OU 3-13 ROD (DOE-ID 1999b) was based on the assumption that government control of the Site would continue for only 100 years (through 2095), followed by potential residential use. The end state vision for the INTEC facility includes entombment and capping of several facilities with a need for long-term institutional controls. A potential variance would be to establish cleanup levels and actions based on scenarios that do not include future residential use of the INTEC site and surrounding area.	Scope: There are two major groups of soil at INTEC that require cleanup. One is soil under buildings and structures, and the other is other surface soil. If cleanup levels were established based on long-term industrial use rather than on future residential use after 100 years, it is likely that the quantity of soil that would require excavation and removal may be reduced by as much as 75%, and it is possible that some areas may not need remediation. Cost: A cost-benefit analysis has not yet been conducted. Schedule: It is expected that the remediation work could be completed sooner. Risk: No increased risk to workers or the public is anticipated, as cleanup levels will be protective of human health and the environment for the planned future land use.	The OU 3-13 remedial design/remedial action work plan has been drafted, and review by agencies is in progress. U.S. Environmental Protection Agency and State of Idaho agreement to modify the OU 3-13 ROD (DOE-ID 1999b) would be needed.	An evaluation should be conducted to determine the remedial actions needed to protect human health and the environment, assuming no future residential use of INTEC. If the currently required work scope is not justified, a cost-benefit analysis should be conducted to determine if the potential savings justify further action. If so, discussions should be initiated with agencies regarding the preferred regulatory path forward.
V-4	**TAN Contaminated Soil:** The OU 1-10 ROD (DOE-ID 1999a) was based on the assumption that government control of the Site would continue for only 100 years (through 2097), followed by potential residential use. A potential variance would be to establish cleanup levels and remedial actions based on scenarios that do not include future residential use of the TAN site and surrounding area.	Scope: Considerable remediation work remains to be done under the OU-1-10 ROD (DOE-ID 1999a), including considerable soil removal associated with the V-Tank closure and other remediation actions. If cleanup levels were established on long-term industrial use rather than future residential use after 100 years, it is likely that the quantity of soil that would require excavation and removal would be reduced, and it is possible that some areas may not need remediation. Preliminary estimates indicate that the volume of soil that would require excavation could be reduced by approximately 6,000 yd^3.	U.S. Environmental Protection Agency and State of Idaho agreement to modify the OU 1-10 ROD (DOE-ID 1999a) would be needed.	An evaluation should be conducted to determine if the selected remedies are necessary, assuming no future residential use of TAN. If the currently required work scope is not justified, a cost-benefit analysis should be conducted to determine if the potential savings justify further action. If so, discussions with agencies should be initiated regarding the preferred regulatory path forward.

Table 5-1. (continued).

ID No.	Description of Variance	Impacts (in Terms of Scope, Cost, Schedule, and Risk)	Barriers in Achieving Risk-Based End State	Recommendations
		Cost: A cost-benefit analysis has not yet been conducted. Schedule: It is expected that the remediation work could be completed sooner. Risk: No increased risk to workers or the public is anticipated, as cleanup levels will be protective of human health and the environment for the planned future land use.		
V-5	**ARA Soil:** The OU 5-12 ROD (DOE-ID 2000c) was based on the assumption that government control of the Site would continue for only 100 years, followed by potential residential use. A potential variance would be to establish cleanup levels and remedial actions based on scenarios that do not include future residential use of the ARA sites and surrounding area.	Scope: Three sites at ARA remain to be remediated (ARA-01, ARA-12, and ARA-23). If cleanup levels were established based on long-term industrial use (or other appropriate nonresidential land use such as a National Environmental Research Park) rather than on future residential use after 100 years, it is likely that the quantity of soil that would require excavation and removal would be reduced, and it is possible that some areas may not need remediation. Preliminary estimates indicate that approximately 50,000 yd^3 of soil remain to be excavated. Cost: A cost-benefit analysis has not yet been conducted. Schedule: It is expected that the remediation work could be completed significantly faster. Risk: No increased risk to workers or the public is anticipated, as cleanup levels will be protective of human health and the environment for the planned future land use.	U.S. Environmental Protection Agency and State of Idaho agreement to modify the OU 5-12 ROD (DOE-ID 2000c) would be needed.	An evaluation should be conducted to determine if the selected remedies are necessary, assuming no future residential use of the ARA sites. If the currently required work scope is not justified, a cost-benefit analysis should be conducted to determine if the potential savings justify further action. If so, discussions with agencies should be initiated regarding the preferred regulatory path forward.

ARA = Auxiliary Reactor Area
ICDF = INEEL CERCLA Disposal Facility
INTEC = Idaho Nuclear Technology and Engineering Center
OU = operable unit
RDX = royal demolition explosive
ROD = record of decision
TAN = Test Area North
TNT = trinitrotoluene
UXO = unexploded ordnance

Table 5-2. Remaining scope of cleanup work at the Idaho National Engineering and Environmental Laboratory Site.

Test Reactor Area *1997 ROD; no active remediation necessary at 47 of 55 contaminated sites.* *Note: active remediation now complete at Test Reactor Area with the exception of a few contaminated areas near actively used buildings and piping. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls and restricted groundwater use and monitoring. Post active remediation phase (institutional control period): unrestricted industrial surface and groundwater use except for certain contaminated areas, which will have continued access and use restrictions. Five-year remedy effectiveness reviews until all risks have been mitigated. Remediation objectives: • Contaminated groundwater beneath facility is within EPA MCLs. • Certain discharge ponds with contamination exceeding agreed-upon risk-based contaminant concentrations contained by engineered native soil cover with continued institutional controls (e.g., Warm Waste Ponds). • Other contaminated soil that would exceed agreed-upon risk-based contaminant concentrations has been relocated to an acceptable soil repository. (Areas with radioactive decay to below risk-based levels would be available for unrestricted use.) • Selected facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Groundwater remediation	Implement WAG 2 ROD—monitored natural attenuation until contaminant concentrations are less than MCLs.	Same	No
Surplus facilities	DD&D to industrial standards. Dispose of debris on-Site.	Same	No
Materials Test Reactor and Engineering Test Reactor and associated facilities and structures	DD&D, removal, or entombment. Use National Environmental Policy Act of 1969 or CERCLA nontime-critical removal action process to determine final end state.	Same	No
WAG 2—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same	No
Perched water monitoring	Implement WAG 2 ROD—monitor perched water to confirm that contaminant levels continue to decrease.	Same	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same	No

Table 5-2. (continued).

Test Area North *The 1995 OU 1-07B ROD, modified in 2001 with developments in technology, and the 1999 OU 1-10 ROD; no active remediation needed for 83 of 94 contaminated sites. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls and restricted groundwater use and monitoring along with ongoing aquifer contamination plume containment and remediation operations (pump and treat and bioremediation) until agreed upon objectives are achieved. Post active remediation phase (institutional control period): unrestricted industrial surface and groundwater use except for certain contaminated areas (e.g., burn pits and landfills), which will have continued access and use restrictions. Five-year remedy effectiveness reviews until all risks have been mitigated. Remediation objectives: • Contaminated groundwater beneath facility is within EPA MCLs. • Residual contamination in Burn Pits II and IV contained by engineered native soil cover with continued institutional controls. • Other contaminated soil that would exceed agreed-upon risk-based contaminant concentrations has been relocated to an acceptable soil repository. (Areas with radioactive decay to below risk-based levels would be available for unrestricted use.) • Selected facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Groundwater remediation—trichloroethene	Implement OU 1-7B ROD. Pump and treat, bioremediation, and monitor until contaminant concentrations are less than MCLs. Ensures control of further migration of contaminants into groundwater and is compliant with the National Contingency Plan groundwater protection strategy.	Same.	No

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Soil remediation	Implement OU 1-10 ROD. Excavate contaminated soil to a depth of 10 ft for a residential basement scenario (or until acceptable level of contamination is reached) and dispose of in ICDF. Establish institutional controls for any contamination left in place. Includes contaminated soil associated with PM-2A Tanks and V-Tanks.	Change cleanup basis from residential use after 100 years to industrial use with institutional controls until risk has been reduced to levels acceptable for unrestricted use. Excavate contaminated soil to a depth of 4 ft for an industrial footing scenario (or until acceptable level of contamination is reached) and dispose of in ICDF, or cap and leave contamination in place. Establish institutional controls for any contamination left in place and maintain controls until risk levels are acceptable for unrestricted use.	Yes
Burn pits remediation	Implement OU 1-10 ROD	Same.	No
V-Tanks remediation	Implement OU 1-10 ROD, including RCRA closure.	Same.	No
PM-2A Tank remediation	Implement OU 1-10 ROD, including RCRA closure.	Same.	No
Surplus facilities	DD&D to industrial standards. Dispose of debris on-Site.	Same.	No
WAG 1—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same.	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same.	No

Table 5-2. (continued).

Waste Reduction Operations Complex, Power Burst Facility, and Auxiliary Reactor Area *2000 ROD; no active remediation needed for 48 of 55 contaminated sites. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls and groundwater monitoring. Post active remediation phase (institutional control period): unrestricted industrial surface and groundwater use except for certain contaminated areas, which will have continued access and use restrictions (e.g., SL-1 reactor contamination area and nine other areas with residual contamination). Five-year remedy effectiveness reviews until all risk has been mitigated. Remediation objectives: • Residual contamination in the SL-1 reactor contamination area contained by engineered cover with continued institutional controls necessary for 400 years. • Land-use restrictions through institutional controls for other areas where residual contamination was determined not necessary to be removed. • Contaminated soil from tank system excavation, and five other sites that would exceed agreed-upon risk-based contaminant concentrations have been relocated to an acceptable soil repository. (Areas with radioactive decay to below risk-based levels would be available for unrestricted use.) • Auxiliary Reactor Area tank systems and contents removed, treated, and disposed of in an acceptable repository. • Selected facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Soil remediation	Implement OU 5-12 ROD. Excavate contaminated soil to a depth of 10 ft for a residential basement scenario (or until acceptable level of contamination is reached) and dispose of in ICDF. Establish institutional controls for any contamination left in place.	Change cleanup basis from residential use after 100 years to industrial use with institutional controls until risk has been reduced to levels acceptable for unrestricted use. Excavate contaminated soil to a depth of 4 ft for an industrial footing scenario (or until acceptable level of contamination is reached) and dispose of in ICDF or cap and leave contamination in place. Establish Institutional Controls for any contamination left in place and maintain controls until risk levels are acceptable for unrestricted use.	Yes

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
RCRA permitted facilities	RCRA closure.	Same.	No
Surplus facilities	DD&D to industrial standards. Dispose of debris on-Site.	Same.	No
Power Burst Facility reactor and associated facilities and structures	DD&D, removal, or entombment. Use National Environmental Policy Act of 1969 or CERCLA nontime critical removal action process to determine final end state.	Same.	No
WAG 5—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same.	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same.	No

Table 5-2. (continued).

Central Facilities Area *2000 ROD; no active remediation needed for 47 of 52 contaminated sites. All active remediation has been completed. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls and groundwater monitoring. Post active remediation phase (institutional control period): unrestricted industrial surface and groundwater use except for certain contaminated areas, which will have continued access and use restrictions (e.g., Central Facilities Area landfills and sewage drain field). Five-year remedy effectiveness reviews until all risk has been mitigated. Remediation objectives: • Contaminated soil at the sewage drain field contained by an engineered covered with institutional controls until cesium decays to acceptable levels (approximately 190 years) • Other contaminated soil that would exceed agreed-upon risk-based contaminant concentrations has been relocated to an acceptable soil repository • Central Facilities Area landfills remain capped in place with groundwater monitoring and institutional controls • Selected facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Groundwater remediation—nitrates	Implement WAG 4 ROD—monitored natural attenuation until contaminant concentrations are less than MCLs. May need to install two additional wells.	Same	No
WAG 4—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same	No

Table 5-2. (continued).

INEEL Sitewide Open Areas *2002 ROD for most areas; details of end-state for groundwater outside facilities still being developed. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with some public access for specifically agreed-upon activities (e.g., EBR-1 Reactor Museum, tribal gatherings, and public highway rest area) with appropriate access and institutional controls and restricted groundwater use and monitoring. Post active remediation phase (institutional control period): unrestricted industrial and special-case surface use with access controls and unrestricted groundwater use except for certain contaminated areas, which will have continued access and use restrictions (e.g., firing and bombing ranges). Five-year remedy effectiveness reviews until all risk has been mitigated. Remediation objectives: • Unexploded ordnance and materials and soil contaminated with explosives and lead exceeding risk-based levels for industrial use will be excavated and disposed of (lead recycled if possible) at an appropriate facility. As part of this remedy, groundwater will be monitored. Institutional controls and access restrictions will be implemented as part of the remedy. • Facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Unexploded ordnance TNT- and RDX-contaminated soil Firing range soil pile lead contamination	Implement OU 10-04 ROD. Remove and dispose of and destroy unexploded ordnance identified through an extensive survey of INEEL. Establish institutional controls for possible unexploded ordnance not identified through extensive survey of INEEL. Excavate contaminated TNT and RDX soil to a depth where an acceptable level of contamination is reached and dispose of in ICDF. Remove lead and other contaminants to an acceptable level and dispose of in ICDF. Recovered lead and copper fragments to be recycled if feasible.	Change cleanup basis from residential use after 100 years to industrial use with institutional controls until risk has been reduced to levels acceptable for unrestricted use. Remove and dispose of and destroy unexploded ordnance as it is identified as has been historically done at INEEL and in areas where future planned uses require remediation. Establish institutional controls to ensure protection of site users from unexploded ordnance. Perform value engineering analysis to determine practical methods to survey and remove the TNT and RDX contamination. Focus excavation of TNT- and RDX-contaminated soil to selected areas where it is necessary from a worker protection, public-visitor scenario, and ecological perspective.	Yes

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
		Remove contaminated soil to a depth where an acceptable level of contamination is reached and disposed of in ICDF. Establish institutional controls for any TNT and RDX contamination left in place. Evaluate cost of lead contamination remediation to residential standards versus industrial with institutional controls and present remedy with lowest life-cycle cost to regulators for consideration.	
Complete remediation and closure of all Voluntary Consent Order tanks	RCRA close applicable tanks.	Same.	No
10-08 ROD groundwater and newly identified release sites	CERCLA—FFA/CO process will be used to develop and implement ROD remedial actions using future industrial use with institutional controls as the basis.	Same.	No
WAG 10—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same.	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same.	No

Table 5-2. (continued).

Idaho Nuclear Technology and Engineering Center *1999 ROD; no active remediation needed for 40 of 101 contaminated sites (details of end state for tank farm contaminated soil and groundwater beneath Idaho Nuclear Technology and Engineering Center facility boundary still being developed but continued restricted use assumed). Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls, groundwater monitoring, and restricted groundwater (including perched water zones) use. CERCLA-approved engineered landfill meeting applicable or relevant and appropriate requirements. Post active remediation phase (institutional control period): restricted industrial surface and groundwater use. Five-year remedy effectiveness reviews until all risks have been mitigated. Remediation objectives: • Contaminated groundwater outside the Idaho Nuclear Technology and Engineering Center facility boundary is within EPA MCLs (institutional controls to prevent use in interim). • Contaminated soil that would exceed agreed-upon risk-based contaminant concentrations has been relocated to an acceptable soil repository. (Areas with radioactive decay to below risk-based levels would be available for unrestricted use.) • Engineered contaminated soil and debris repository with material meeting agreed-upon waste acceptance criteria with access restrictions. • SFE-20 tank removed, treated, and disposed of in an acceptable repository. • Facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Sodium-bearing waste	In accordance with 1995 Settlement Agreement, process and dispose of off-Site.	Same.	No
High-level waste tanks and associated systems	RCRA closure. DOE Order 435.1 closure.	Same.	No
Calcine and associated storage facilities, structures, and systems	In accordance with 1995 Settlement Agreement, retrieve, process, package, and have road ready to dispose of off-Site by 2035.	Same.	No
Environmental Management managed legacy spent nuclear fuel	In accordance with 1995 Settlement Agreement, remove from the State of Idaho by 2035.	Same.	No
Legacy denitrator product special nuclear material	Repackage and transfer product to another site.	Same.	No

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Legacy unirradiated light water breeder reactor fuel	Transfer fuel to another site. A recommended path forward will be submitted by September 30, 2004.	Same.	No
Environmental Management managed legacy special nuclear material to another site	Transfer material to another site.	Same.	No
Contaminated soil under buildings and structures	Implement 3-13 ROD. As DD&D occurs, determine if soil needs to be removed. Excavate contaminated soil to a depth of 10 ft for a residential basement scenario (or until acceptable level of contamination is reached) and dispose of in ICDF. Establish institutional controls for any contamination left in place.	Change cleanup basis from residential use after 100 years to industrial use with institutional controls until risk has been reduced to levels acceptable for unrestricted use. Excavate contaminated soil to a depth of 4 ft for an industrial footing scenario (or until acceptable level of contamination is reached) and dispose of in ICDF, or cap and leave contamination in place. Establish institutional controls for any contamination left in place and maintain controls until risk levels are acceptable for unrestricted use.	Yes
Contaminated surface soil	Implement 3-13 ROD. Excavate contaminated soil to a depth of 10 ft for a residential basement scenario (or until acceptable level of contamination is reached) and dispose of in ICDF. Establish institutional controls for any contamination left in place. Estimate 150,000 m^3.	Change cleanup basis from residential use after 100 years to industrial use with institutional controls until risk has been reduced to levels acceptable for unrestricted use. Excavate contaminated soil to a depth of 4 ft for an industrial footing scenario (or until acceptable level of contamination is reached) and dispose of in ICDF, or cap and leave contamination in place. Establish institutional controls for any contamination left in place and maintain controls until risk levels are acceptable for unrestricted use.	Yes

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Groundwater remediation in Snake River Plain Aquifer outside the Idaho Nuclear Technology and Engineering Center fence	Implement 3-13 ROD. Monitored natural attenuation with contingent remedy if action level reached.	Same.	No
SFE-20 Hot Waste Tank removal	Implement 3-13 ROD. Remove and dispose of in accordance with RCRA.	Same.	No
Buried gas cylinders	Implement 3-13 ROD. Remove and dispose of in accordance with appropriate regulations.	Same.	No
Tank farm contaminated soil interim action	In accordance with atomic research development, cover three hot spots by September 2004 and pursue 3-14 ROD planning date of 2006 versus enforceable milestone of May 2010.	Same.	No
Tank farm contaminated soil ROD (OU 3-14)	CERCLA—FFA/CO process will be used to develop and implement ROD remedial actions using future industrial use with institutional controls as the basis.	Same.	No
RCRA permitted facilities	RCRA closure.	Same.	No
Surplus facilities	DD&D to industrial standards. Dispose of debris on-Site.	Same.	No
WAG 3—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same.	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same.	No

Table 5-2. (continued).

Radioactive Waste Management Complex—Subsurface Disposal Area	During active remediation phase: industrial surface use with appropriate institutional controls and restricted groundwater use and monitoring. Post active remediation phase (institutional control period): restricted industrial and groundwater use with appropriate institutional controls. Five-year remedy effectiveness reviews until all risks have reached acceptable levels for unrestricted use. Remediation Objectives: • Contaminated groundwater outside the facility (Radioactive Waste Management Complex) boundary is within EPA MCLs • Facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
Stored transuranic waste	Complete processing and disposal off Site of stored transuranic waste.	Same	No
Unirradiated uranium-233 stored at the Transuranic Storage Area	Transfer or ship unirradiated uranium-233 stored at the Transuranic Storage Area to another U.S. Department of Energy site.	Same	No
Contact-handled low-level waste disposal at the Radioactive Waste Management Complex	Close out contact-handled low-level waste disposal at the Radioactive Waste Management Complex.	Same	No
Remote-handled low-level waste disposal at the Radioactive Waste Management Complex	Close out remote-handled low-level waste disposal at the Radioactive Waste Management Complex.	Same	No
Groundwater contamination	Implement OU 7-08 ROD. Vapor vacuum extraction of volatile organic compounds from the vadose zone under the Transuranic Storage Area until acceptable concentration of contaminants is reached.	Same	No
Subsurface Disposal Area Pre-ROD accelerated risk reduction	Implement accelerated Transuranic Storage Area landfill waste removal, stabilization, and containment actions.	Same	No
Subsurface Disposal Area ROD	CERCLA—FFA/CO process will be used to	Same	No

Table 5-2. (continued).

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
(OU 7-13/14)	develop and implement ROD remedial actions using future land use of industrial and landfill with institutional control as the basis.		
RCRA permitted facilities	RCRA closure.	Same	No
Surplus facilities	DD&D to industrial standards. Dispose of debris on-Site.	Same	No
WAG 7—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same	No

Table 5-2. (continued).

Argonne National Laboratory-West *1998 ROD; no active remediation needed for 33 of 41 contaminated sites.* *Note: active remediation activities complete with the exception of ANL-01 Industrial Waste Pond, which will be remediated in Fiscal Year 2004. Any newly identified sites will be addressed under OU 10-08.*	During active remediation phase: industrial surface use with appropriate institutional controls and restricted groundwater use and monitoring. Post active remediation phase (institutional control period): unrestricted industrial surface and groundwater use. Five-year remedy effectiveness reviews until all risks have been mitigated. Remediation objectives: • Contaminated soil that would exceed agreed-upon risk-based contaminant concentrations will be phytoremediated or relocated to an acceptable soil repository • Selected facilities decontaminated and decommissioned.

Remaining Cleanup Objectives	Current End State Plan	Risk-Based End State	Potential Variance Yes or No
ANL-01 Industrial Waste Pond	Phytoremediation at the Industrial Waste Pond was not successful, so the area will be remediated in Fiscal Year 2004 by implementing the ROD-contingent remedy of excavation and disposal of the sediments that are contaminated to levels above remediation goals. The excavated soil will be disposed of in the ICDF. No long-term institutional controls will be required for this site.	Same	No
WAG 9—post closure management	Implement post closure maintenance, monitoring, institutional controls, and 5-year remedy reviews.	Same	No
Turnover area to LPSO for LTS	Continue 5-year remedy reviews.	Same	No

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
DD&D = deactivation, decontamination, and decommissioning
EPA = U.S. Environmental Protection Agency
FFA/CO = Federal Facility Agreement and Consent Order
ICDF = INEEL CERCLA Disposal Facility
INEEL = Idaho National Engineering and Environmental Laboratory
LPSO = lead program secretarial office
LTS= long-term stewardship
MCL = maximum contaminant level
OU = operable unit
RCRA = Resource Conservation and Recovery Act
RDX = royal demolition explosive
ROD = record of decision
TNT = trinitrotoluene
WAG = waste area group